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NOVEMBER
1947

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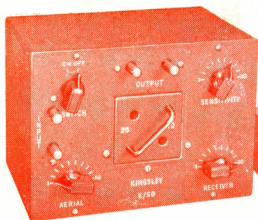


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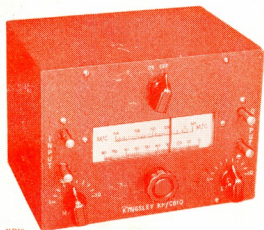
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AMATEUR RADIO

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EDITORIAL



For some months work has been proceeding on the production of a new Federal Constitution for the Wireless Institute of Australia.

Whilst the existing Constitution has served us well over the past years, there have been many changes in Amateur Radio during this time, and if the development of the Institute is to be maintained, changes and improvements must be made to the Federal Constitution to provide us with an up-to-date guide for our future planning.

The original draft of this document was circulated to all Divisional Councils for comment and advice. These suggestions have now been incorporated in the final draft, which was approved by the Federal Executive this week.

The new Constitution will now be distributed to all Divisional Executives for their study and guidance. We feel certain that our activities will be further unified and strengthened by its

adoption in all Divisions of the Institute.

Some considerable effort has also been made by the Federal Executive to study each Divisional Constitution, with a view to preparing a single unified Constitution for all Divisions. This work will be related to the new Federal Constitution and will be completed within the next two months.

These and other organisational changes were decided upon at the last Federal Convention. The implementation of the plans then laid down, as a directive for the Federal Executive, will do much to improve and consolidate the work of the Institute as a Federal Organisation.

It is hoped that such organisational improvements will greatly assist us to present our views and requirements in a unified manner, thus enabling us to advance and improve Amateur Radio in accordance with a properly directed and constitutional policy.

W.R.G.

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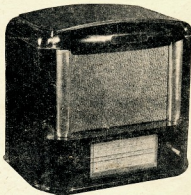
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FREQUENCY MODULATION— PRINCIPLES AND EQUIPMENT FUNDAMENTALS

By A. H. KAYE*, B.Sc. (Melb.), A.M.I.E. (Aust.)

The following is taken from a lecture delivered to the Victorian Division of the Wireless Institute of Australia on 1st October, 1947, and discusses in simple non-mathematical terms, the basic principles of radio transmission and reception using frequency modulation. Readers are referred to the very extensive literature on the subject for more detailed information and, in addition, further articles will be published later, on design and construction of items of equipment.

In this paper, I have endeavoured to confine myself to basic principles and fundamentals, and have avoided discussion of technical details of equipment used, and of the relative merits of the various types of equipment which have been developed and discussed in the technical press. I understand that arrangements are being made for members to discuss such matters later.

Mathematical analysis cannot adequately be dealt with in this type of paper and is excluded, but a thorough understanding of frequency modulation, or indeed any system of modulation, involves mathematical investigation.

FUNDAMENTALS

Any alternating current or electro-magnetic wave has three characteristics with which we are concerned, viz. frequency, amplitude and phase, and any of these three characteristics can be used for the transmission of intelligence. Basically, all that is required is that intelligence shall be able to modulate the electro-magnetic wave at the transmitting end, and that at the receiving end, the equipment shall be able to recognise that the change has been made.

In Figure 1 I have shown a sinusoidal curve representing a modulating signal together with two other curves indicating what happens when a carrier frequency is modulated in amplitude, and in frequency. These curves represent current plotted as a graph against time, and I would draw attention to the following fundamental differences:—

- (a) In respect to carrier frequency:
 - (i) In amplitude modulation the frequency remains constant.
 - (ii) In frequency modulation the frequency changes with the modulation cycle.
- (b) In respect to magnitude:
 - (i) In amplitude modulation, the magnitude of the car-

rier current varies with the modulation cycle and the condition of 100% modulation is defined as one in which the magnitude of the current varies between zero and twice the value of the unmodulated carrier.

- (ii) In frequency modulation, the magnitude of the carrier is constant irrespective of modulation.

Briefly, in amplitude modulation we have a cycle of high amplitude (or current) and low amplitude for each cycle of modulation, i.e. one thousand times per second if the modulating frequency is 1,000 cycles. In frequency modulation we have a cycle of high frequency and low frequency for each cycle of the modulating frequency. It is important to note that the modulating frequency determines the rate at which changes

in amplitude or frequency take place, which would be 1,000 times per second in the case quoted.

A second point to be considered is the amount by which the amplitude or frequency changes. As mentioned above, 100% modulation in the amplitude case means that the magnitude of the carrier changes from zero to twice normal value, and lower depths of modulation than 100% give intermediate values. In frequency modulation the theoretical analogous case would be a change from zero frequency to twice normal frequency, but this is not easily achieved, nor is it desirable, and in practice a maximum frequency deviation, i.e. a maximum allowable change from the normal carrier frequency, is specified, and can in many ways be regarded as similar to 100% modulation.

For lower depths of modulation than 100%, i.e. in the practical case when the audio input is from a low level circuit or voice, amplitude modulation means that the magnitude of the current is confined to limits between zero and twice normal value, while in frequency modulation the change in frequency is less than the maximum allowable deviation.

The third characteristic of the electro-magnetic wave, namely phase, has been excluded from this discussion because of its similarity to frequency modulation. Obviously, a change of phase necessitates a change of frequency and vice versa. Frequency modulation is in fact the same as phase modulation in which the amplitude of the audio modulating signal is inversely proportional to that modulating frequency; this is of great practical importance because by predistorting the modulating fre-

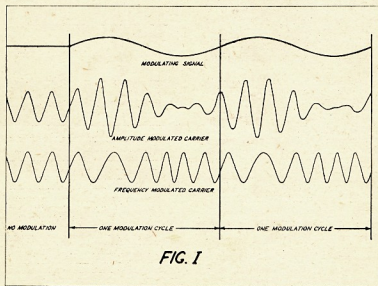


FIG. 1

*Divisional Engineer (Radio Station Construction), P.M.G.'s. Department, Central Administration.

quencies according to an inverse law and subsequently phase modulating the carrier, we achieve a frequency modulated carrier.

ANALYSIS OF MODULATED WAVE AND BAND WIDTH

In amplitude modulation it is well known that a modulated wave can be analysed into three frequencies, viz. the carrier and two side bands, each side band being separated from the carrier frequency by an amount equal to the modulating frequency, one side band being higher in frequency than the carrier and the other lower; this is the case where a single modulating frequency of sinusoidal form is used, but further side bands are generated when the modulating signal is a complex one. The transmission system must be such as to accommodate a band of frequencies wide enough to include the side bands corresponding to the highest modulating frequency which will be used, as for example about 3,400 cycles each side of the carrier for a telephone service, and about 10,000 cycles each side of the carrier for broadcasting. These side bands are indicated by Figure 2.

I will also draw attention to a further feature of amplitude modulation indicated by this figure, i.e. that the amplitude of the carrier is constant and that the side bands represent **added power**; the total power to be handled by the transmission system is thus higher than the power in the carrier alone when unmodulated, and for 100% modulation this means that the total power handled is 1.5 times the unmodulated carrier power, or 15 kW where the unmodulated carrier power is 10 kW.

In the frequency modulation case, the analysis is not so simple, and with a single modulating frequency an infinite number of side bands is produced, these being separated from the carrier frequency by multiples of the modulating frequency and symmetrically disposed above and below the carrier. This is indicated by Figure 3.

In contrast to the amplitude modulation case where modulation involves the addition of power, in frequency modulation the **total power**, i.e. power in the carrier plus that in the side bands, is fixed and the carrier power itself is reduced during modulation. This gives an advantage to the frequency modulation system, in that the transmission system is not required to handle, at any time, a greater power than that in the carrier, with an advantage by comparison with amplitude modulation of not less than 3 db, the actual value depending on the system of amplitude modulation considered.

The amplitude of the successive side bands on either side of the carrier follow a Bessel function law, and the amplitude and therefore the im-

portance of the side bands decreases as we proceed to higher order side bands.

It is here necessary to define several terms, which will be used later:—

Deviation is the maximum amount by which the frequency changes above and below the carrier frequency.

Modulation index, which you see in the figure, is the ratio of the amount by which the carrier is changed above and below the carrier, to the modulating frequency causing that change. A special case of modulation index is frequently termed the deviation ratio and is the ratio of the deviation, i.e. **maximum change above and below carrier frequency**, to the maximum modulating frequency for which the system is designed.

Figure 4 shows how the magnitude of the carrier and of the first pair of side bands varies according to the

modulation index, which as defined above is the ratio between frequency change above and below carrier frequency to the modulating frequency causing that change. It should be noted that under some conditions the carrier magnitude can be zero, and under others negative in sign, which means a phase change of 180°.

From a point of view of satisfactory transmission, it is sufficient only to transmit the significant side bands, and it is generally considered that a band width sufficient to cover side bands on each side of the carrier equal to M plus 1 times the modulating frequency is satisfactory, M being the modulation index. As an example, if the modulating frequency is 10,000 cycles per second, the band width required for various modulation indices is given in Figure 5.

I have dealt with only the simple case of frequency modulation where a single modulating frequency is used, and with complex modulating frequencies additional side bands are produced, but the magnitude of the additional side bands is proportional to the product of two Bessel functions and therefore decreases rapidly; also the maximum possible deviation is shared between several modulating frequencies, so that the modulation index for any one frequency is less than it would be if operating by itself.

NOISE

The subject of noise is introduced at this stage because considerations of signal to noise ratio in the output of a transmission system are fundamental to the problem of providing satisfactory transmission of intelligence; and the band width, deviation ratio and other characteristics of the f.m. system affect this noise output from the equipment.

In the following, it is necessary to keep clearly in mind the difference between carrier-to-noise ratio, which is the ratio between carrier voltage and noise voltage at the receiver input, and signal-to-noise ratio, which is the ratio between audio output voltage, i.e. the required intelligence, and audio output noise, i.e. the resulting interference. Carrier-to-noise ratio and signal-to-noise ratio are not necessarily equal.

The noise voltages encountered in radio frequency circuits may be considered as being modulated both in amplitude and frequency, and when such voltages are superimposed on an amplitude modulated carrier, disturbances appear in the radio receiver output.

In frequency modulation there are two effects, firstly a variation of amplitude as in the case with amplitude modulated carriers, and in the second place the frequency modulated component of the noise phase modulates the carrier, thus causing frequency modulation. In respect to the first effect, the discriminator in

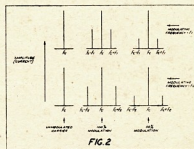


FIG. 2

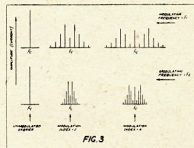


FIG. 3

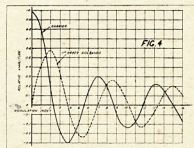


FIG. 4

the receiver, i.e. the frequency modulation detector, tends to be unresponsive to amplitude variations, and by use of limiting equipment in the receiver, this effect can be almost completely removed.

As regards the second effect it is a characteristic of phase modulation that the resulting frequency change is proportional to the difference between the carrier frequency and the frequency of the noise or of the interference, and therefore produces at the receiver output an audio voltage proportional to this difference. Thus radio noises of frequencies close to the carrier cause less interference than noises of frequencies further from the carrier. With random noise caused by thermal and shot effects, the noise frequencies are evenly spread over the spectrum and are of almost constant amplitude. Figure 6 indicates the effect such random noise will have in the amplitude modulation and in the frequency modulation cases. This pattern for f.m. is frequently referred to as the **f.m. noise triangle** and the ratio of the interference in the f.m. and a.m. cases equals the ratio of the square roots of the sums of the squares of the ordinates of the triangle and rectangle respectively. The squaring is involved, since noise voltages must be added on an r.m.s. basis and the ratio becomes

$$\frac{1}{\sqrt{3}}$$

or an advantage for f.m. of 4.75 db.

For impulse noise as from ignition systems, the improvement with f.m. is greater and has been shown experimentally to be approximately 6 db.

It is worthy of note that impulse noise has a minimum output when the carrier is unmodulated and the receiver is precisely tuned, thus in silent passages the low noise level from this source is most marked.

It should be particularly noted that in the figure I have used a **deviation ratio of unity**, i.e. the maximum frequency deviation equals the highest modulating frequency.

This improvement of 4.75 db to 6 db for f.m. over a.m. is **only realised** if the peak carrier voltage is greater than twice the peak noise voltage, and this requirement is of considerable importance in determining the limit of the service range of an f.m. transmitter.

Where carrier and noise inputs are comparable in magnitude, the phase modulation is not directly proportional to the assumed sinusoidal noise voltage and the audio output from the receiver is not sinusoidal but has a peaked wave shape containing harmonics which greatly increase the interference.

This discussion and the figure deal with the case where the deviation ratio is unity, but it is not necessary or usual to limit the deviations in

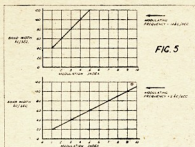


FIG. 5

this manner, and by increasing the deviation ratio the audio output in the receiver is similarly increased. As mentioned above, this is somewhat similar to increasing the depth of modulation in the a.m. case. Such increase of deviation will of necessity involve an increase in the band width accepted by the receiver, which introduces further carrier noise frequencies, but provided the peak value of the carrier voltage is greater than twice the peak noise voltage, there is no increase in audio noise in the receiver, because the phase modulation of the carrier by these additional noise frequencies is outside the audible range; increasing the deviation ratio and therefore the receiver band width thus gives a further improvement by comparison with the usual a.m. system as shown in Figure 7.

In connection with the improvement in the signal to noise ratio in the audio output of 4.75 db discussed above in connection with the "f.m. noise triangle" and the additional improvements due to increase in the deviation ratio, it was mentioned that the peak carrier voltage must be more than twice the peak noise voltage. When the carrier signal strength is comparable in value with the noise signal strength, the improvement of f.m. over a.m. due to both these factors disappears, and if the peak carrier to peak noise voltage ratio is less than unity, interaction between the noise frequencies results in the production of noise in the receiver output which is audible.

There is thus threshold carrier signal strength, and a threshold distance from the f.m. transmitter, at which the audio output signal to noise ratio decreases sharply, giving a well defined limit to the service range of the transmitter. Further, the carrier signal strength at which this threshold condition occurs increases with increase of deviation ratio, i.e. other things being equal, the service range is less for high deviation ratio than for low deviation ratio.

Summing up considerations of frequency deviation, signal to noise ratio in audio output, and threshold distance, we have:—

- (a) Increase of deviation ratio means improved signal to noise ratio in the audio output of the receiver; and

- (b) Increase of deviation ratio means a decrease of threshold distance.

Thus the choice of deviation ratio in this connection is a matter of compromise and the best solution depends on the nature of the service to be given, e.g. broadcasting service requires a good signal-to-noise ratio in the receiver output throughout the service area of the transmitting station, whereas a communication service as required by the Police Department demands maximum threshold distance and provided the signal to noise ratio does not fall to too low a value this is a secondary consideration.

Figure 8 indicates how signal-to-noise ratio and threshold distance depend on the deviation ratio; for comparison an amplitude modulated case is also given in the figure.

It should be particularly noted that these characteristics of signal to noise ratio and threshold distance depend on the deviation ratio or

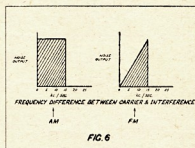


FIG. 6

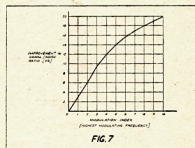


FIG. 7

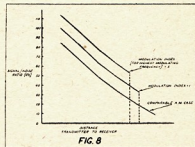


FIG. 8

modulation index, not on the deviation itself, i.e. conditions are similar with a deviation of 15 Kc. and a maximum modulating frequency of 3 Kc. or with a deviation of 75 Kc. and a maximum modulating frequency of 15 Kc., since both these arrangements give a modulation index of 5.

INTERFERENCE FROM OTHER STATIONS

Interference from other stations, whether they be amplitude or frequency modulated, behaves in a manner similar to noise and provided the desired station signal strength is approximately twice that of the unwanted station, interference is much less in the case of frequency modulation than it is with amplitude modulation. When the desired signal is demodulated the weaker interfering signal appears as a super-imposed heterodyne of frequency equal to the instantaneous frequency difference between the two stations, and when the interfering station also is frequency modulated this heterodyne takes a varying and complex form.

When both stations are of the high deviation ratio type, as for

instance in broadcasting, instantaneous frequency difference will, on the law of averages, be almost entirely supersonic and therefore inaudible; even when both stations are on the same carrier frequency the heterodyne will, for some 40-60% of the time, be inaudible.

This suppression of a weaker station by a stronger one is an important characteristic of f.m. transmission and is sometimes referred to as the "capture effect." Thus, when the service areas of two stations overlap there will be little interference one with the other except in a relatively limited zone where the signal strengths are sensibly equal.

RADIO FREQUENCIES

It has been seen above that improvement by comparison with amplitude modulation is most marked when high deviation ratios are used involving wide band transmission. Spectrum space for wide bands cannot be spared in the frequency ranges that have been extensively used for other purposes up to the present, and in fact some frequency ranges are already grossly overcrowded. For instance, in the present medium frequency broadcast band from 550-1500 Kc., there are 96 channels suit-

able for amplitude modulation, using a channel spacing of 10 Kc., but if the same range of frequencies were used for frequency modulation with a channel spacing of about 200 Kc., there would only be 4 or 5 channels.

There is no inherent reason why frequency modulation should not be used at the low or medium radio frequencies, except because of the force of circumstances that there is insufficient spectrum space left and as a result frequency modulation is used at higher frequencies, in practice the lowest working channel being about 40 Mc.

There is, however, one factor which reduces somewhat the application of frequency modulation using wide bands and high modulation indices to lower frequencies in that multipath transmissions as could be encountered in long distance ionospheric propagation cause selective fading because of the large number of side bands involved.

Three important misconceptions regarding frequency modulation have arisen by reason of this operation at very high frequencies. These are:—

(i) **Range**.—It has been mentioned as a disadvantage of frequency modulation that the service range is limited to optical or near optical distances, but this is a function of frequency, and the same objection would apply to amplitude modulation if used at such frequencies. Also because of this limited range, it is possible to share channels extensively by separating the stations geographically; apart from the benefit derived from the "capture effect," this state of affairs would be similar for amplitude modulation.

(ii) **Noise**.—It has been seen above that frequency modulation has great advantages over amplitude modulation in respect to signal-to-noise ratio in the output of the receiver, but in addition interference due to static is lower at the higher frequencies, and this has been credited to frequency modulation, whereas similar benefits are obtained with amplitude modulation at such frequencies. It is of interest to note that one of the reasons for this lower noise level is that noises generated at distant points are not received because of the optical or near optical propagation properties at very high frequencies.

(iii) **Fidelity**.—This comment applies particularly to broadcasting, and it has been claimed that frequency modulation gives us the possibility of transmitting an audio frequency range extending to 15 Kc. It might be debatable whether or not this extension of the audio frequency range is truly an advantage, but in any case 15 Kc. audio frequency range could be transmitted quite well with amplitude modulation provided adequate spacing between channels is arranged.

(To be concluded.)

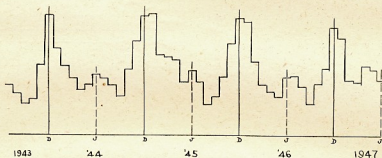
HISTOGRAM RECORDING BEHAVIOUR OF SPORADIC E

Of interest to V.H.F. enthusiasts generally is the Histogram shown below depicting the behaviour of the E layer (or Sporadic E) during the period July, 1943, to June, 1947, as recorded by the Radio Research Board at their Brisbane Recording Station and through the courtesy of whom the data has been made available.

As will be seen the maxima during December and January is most marked as is the mid-winter peak, while the readings for September show clearly the reason for the lack of any spectacular achievements on the Field Day held in September last.

The method of plotting the graph is of interest. When Frequencies in excess of 2, 3, 5, and 7 Megacycles are reflected, each is multiplied by a factor of 1, 2, 3, and 4 respectively, and it will be obvious that a predominance of high frequency reflections on any given day will result in a high reading for that particular day. The loading of the lower frequencies is taken into account to, in effect, broaden the canvas on which the picture is painted, and to obviate what otherwise might be a purely local condition.

We are indebted to VK4ZU for the above.



LOADED ES HISTOGRAM - 1943-47.

ALL EUROPEAN DX CONTEST

The Netherland Radio Society, V.E.R.O.N., is sponsoring the first post-war European Contest, and the rules of the Contest, which will be conducted in November and December, are as follows:—

GENERAL PLAN OF CONTEST

Amateurs with European prefixes will be taking part in a QSO Party with stations in all parts of the world. When they effect DX QSOs, self-assigned serial numbers (three-figure report plus three self-assigned numbers that will be sent all stations) will be exchanged and noted in the contest report. From this record each station will submit its score. From the scores (which the Contest Committee will verify by cross-examination of logs) the winners will be determined for each locality, and will be awarded certificates. Three points will result from a full exchange in any band, but no more can be counted for the same station unless both stations connect in another band for additional exchanges.

Stations outside Europe will try to work as many European stations as possible to exchange serial numbers. Stations in all localities need only take part on the contest dates and report results at the end of the tests to be eligible for awards. The main

competition, each operator must consider, comes from the individual operators in his country using the same prefix. Consult the list of call prefixes for the different countries of the world as given in the February 1947 issue of QST. Separate certificates will be awarded the c.w. and the phone winner for each country and likewise for each district in the U.S.A. and Canada. The first week-end is a contest for c.w. Hams and the second week-end a separate contest for phone Hams. In no sense will it be a competition between c.w. and phone operators.

The contest times are based on Greenwich time and should be computed for any part of the world from "Greenwich."

CONTEST RULES—C.W.

1. The contest runs from Friday, 28th November, 1801 G.C.T., until Sunday, 30th November, 2359 G.C.T., 1947.
2. Only c.w.-c.w. QSOs will count.
3. A six-figure group is exchanged. The first three digits of the serial

number sent shall constitute the RST reports of the station to which the number is sent. As the last part, a self-assigned three-numeral group is used that stays the same throughout the contest.

4. All contest work must take place within the contest period.

5. Logs must include: call, date, time, serial numbers exchanged, band used and points claimed.

6. All bands may be used.

7. Off-frequency operation will result in disqualification.

8. Scoring: Both European station and the station outside Europe receive one point when the European serial number is acknowledged by the station outside Europe. Each station, similarly, may add two additional points when a six-figure number has been acknowledged by an European station. Every good QSO counts a maximum of 3 points. Scoring points shall be multiplied by the number of worked countries. The multiplier is increased by working the same countries on additional bands.

9. For European stations there is a quota of three stations per country that may be worked, except that if one-way exchanges with some of these three have been made, more stations can be worked. European stations cannot get more than 9 points (basic) per country. This quota shall be permitted in each different band. For stations outside Europe there is no quota limit.



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V.E.R.O.N.

AC3		Sikkim	FG8	Guadeloupe
AC4		Tibet	F18	French Indo-China
AR		Syria	FK8	New Caledonia
C		China	FL8	Somaliland, French
CE		Chile	FM8	Martinique
CM		Cuba	FN	French India
CN	French	Morocco	FO8	French Oceania, Tahiti
CO		Cuba	FP8	Miquelon and St. Pierre Is.
CP		Bolivia	FQ8	French Equatorial Africa
CR4	Cape Verde	Islands	FR8	Reunion Islands
CR5	Guinea (Portuguese)		FT8	Tunisia
CR6		Angola	FU8	New Hebrides
CR7		Mozambique	FY8	Guiana (French and Inini)
CR8	Goa (Portuguese India)		G	England
CR9		Macan	GC	Channel Islands
CR10	Timor (Portuguese)		GI	Ireland, Northern
CT		Portugal	GM	Scotland
CT2		Azores Islands	GW	Wales
CT3		Madeira Islands	HA	Hungary
CX		Uruguay	HB	Switzerland
D		Germany	HC	Ecuador
EA		Spain	HE1	Liechtenstein
EA6	Balearic	Islands	HH	Haiti
EA8	Canary	Islands	HI	Dominican Republic
EA9	Morocco, Spanish		HK	Colombia
EI		Eire	HP	Panama
EK		Tangier Zone	HR	Honduras
EL		Liberia	HS	Siamp, Thailand
EP		Iran	HZ	Saudi Arabia (Hedjaz & Nejd)
EQ		Iran	I	Italy
ET		Ethiopia	I6	Eritrea
F		France	J	Japan
FA		Algeria		
FB8		Madagascar		
FD8		Togoland		
FE8		Cameroons, French		
FF8		French West Africa		

ON	Belgium	UM8	Kirghiz	VS4	Borneo, British North
OQ	Belgian Congo	UN1	Karelo, Finnish Rep., Soviet Union	VS5	Brunei (Sarawak)
OX	Greenland			VS6	Hong Kong
OY	The Faeroes	UO5	Moldavia Soviet Union	VS7	Ceylon
OZ	Denmark	UP	Lithuania	VS9	Aden and Socotra Islands
PA	Netherlands	UQ	Latvia	VU	India
PJ	Neth. West Indies	UR	Estonia	VU4	Laccadive Islands
PK	Java	VE	Canada	VU7	Bahrain Islands
PK4	Sumatra	VK	Australia	W	U.S.A.
PK5	Borneo, Neth.	VK4	Papua	XE	Mexico
PK6	Celebes and Molucca Islands	VK9	New Guinea Territory	XU	China
	New Guinea Neth.	VO	New Foundland and Labrador	XZ	Burma
PX	Andorra	VP1	British Honduras	YA	Afghanistan
PY	Brazil	VP2	Leeward and Windward Is.	YJ	Iran
PZ	Guiana (Neth. Surinam)	VP3	Guiana, British	YN	New Hebrides
SM	Sweden	VP4	Trinidad and Tobago	YR	Nicaragua
SP	Poland	VP5	Caymen Is., Jamaica, Turks and Caicos Islands	YS	Romania
ST	Anglo Egyptian Sudan	VP6	Barbadoes	YT	Salvador
SU	Egypt	VP7	Bahama Islands	YU	Yugoslavia
SV	Crete and Greece	VP8	Falkland Is., South Georgia, Sandwich Is., Orkney Is., and Shetland Is.	YV	Yugoslavia
SV5	Dodecanese Islands (Rhodes)			ZA	Venezuela
TA	Turkey	VP9	Bermuda Islands	ZB1	Albania
TF	Iceland	VQ1	Zanzibar	ZB2	Malta
TG	Guatemala	VQ2	Rhodesia, Northern	ZC1	Gibraltar
TI	Cocos Island and Costa Rica	VQ3	Tanganyika Territory	ZC2	Trans Jordan
UA1-3-4-6	European Russian Soc. Fed. Sov. Rep. Soviet Union	VQ4	Kenya	ZC3	Cocos Island
UA9-0	Asiatic Russian S.F.S.R. Soviet Union	VQ5	Uganda	ZC4	Christmas Island
UB5	Ukraine, Soviet Union	VQ6	Somaliland, British	ZC6	Cyprus
UC5	White Russian S.S.R., Soviet Union	VQ8	Chagos Is., Mauritius	ZD1	Palestine
		VQ9	Seychelles	ZD2	Sierra Leone
UD6	Azerbaijan Soviet Union	VR1	Gilbert and Ellice Is., and Ocean Island	ZD3	Nigeria
UF6	Georgia	VR2	Fiji Islands	ZD4	Gambia
UG6	Armenia	VR3	Fanning Is., Christmas Is.	ZD5	Gold Coast and Brit. Togoland
UH8	Turkoman	VR4	Solomon Islands	ZD6	Nyasaland
UI8	Uzbek	VR5	Tonga (Friendly) Islands	ZD7	St. Helena
UJ8	Tadzhik	VR6	Pitcairn Island	ZD8	Ascension Island
UL7	Kazakh	VSI-2	Malaya	ZD9	Tristan da Cunha and Gough Islands

(Continued on page 12)



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EARPHONES.—Several types, including crystal, moving coil, magnetic. U.S.A. Navy types, with large ear pads. 35/- to £3 per pair Limited quantity only.

TRANSCIEVERS, 109's, S.T.C., 9 Valves, covers 80-metre band. Tube line of Receiver, 6U7's, 6K8's, 6B6's. Transmitter, 3-807's. Receivers easily convertible for local reception, 6-volt Vibrator operated. Price £12/10/0

TRANSMITTERS.—Famous A.T.5 50-watt, phone or C.W. Xtal or V.M.O. Tube line-up Occ. 6V6, Doubler 807, 2-807 in parallel in final. Band coverage 500 K.C.-15 Mc. Meter covers all stages. Input 12-volt A.C. or D.C. H.T.500-V-300. Generator supplied with unit, or A.C. Transformers and chassis supplied. Also Aerial Coupling Unit Price £25

TRANSMITTERS. 3B.Z. A.W.A. Xtal controlled, 6 holders, band coverage 3.5 Mc. and 7 Mc. Tubes used, 4.6V6's-1-807, Vibrator operated off 12-volt battery. Meter for all stages. This set operates on phone of C.W. Price £17/10/0

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FEDERAL NOTES

NEW FEDERAL SECRETARY

In these notes last month the resignation of Alec Clyne, as Federal Secretary, was announced with regret. The Headquarters Division (Victoria) has approved of the nomination of Bill Mitchell (VK3UM) as Alec's successor and we take this opportunity of greeting Bill to his new post in which we wish him every success.

FREQUENCY DATA FROM R.S.G.B.

One of the main thoughts which has been in the minds of most Amateurs is the outcome of the Atlantic City Conference on Telecommunications and in this regard the Federal Executive have not, as yet, received any official advice from our representatives. I.A.R.U., as to the results achieved. The following is taken from a special communication issued by the Radio Society of Great Britain to all their members and in no way is to be interpreted as the final allocations for either United Kingdom or Australian Amateurs.

Band	Width	Remarks
*1715- 2000 Kc.	200 Kc.	200 Kc. shared (max. power 10 watts)
3500- 3800 " "	300 " "	Shared.
7000- 7100 " "	100 " "	Exclusive.
7100- 7150 " "	50 " "	Shared.
14000-14350 " "	350 " "	Exclusive except that U.S.S.R. proposes to operate internal Fixed Services between 14250-14350 Kc.
21000-21450 " "	450 " "	Exclusive.
28000-29700 " "	1700 " "	Exclusive.
144- 146 Mc.	2 Mc.	Exclusive.
420- 460 " "	40 " "	Shared (harmful interference clause inserted concerning interference with Air Navigation Aids).
1215- 1300 " "	85 " "	Exclusive.
2300- 2450 " "	150 " "	Exclusive.
5650- 5850 " "	200 " "	Exclusive (I.S.M. equipment will operate at 5850 Mc.—tolerance $\pm 0.6\%$).
10000-10500 " "	500 " "	Exclusive.

*These figures are as supplied by R.S.G.B.

Whilst on paper the United Kingdom has lost the 56 Mc. band, they have every reason to believe that frequencies around 60 Mc. will be allotted later, on a national basis.

Note.—There is a strong possibility that they shall be given permission to use the I.S.M. (Industrial Scientific and Medical) Band around 11 Metres.

NARROW-BAND F.M.

Following on the recent release of frequency modulation and pulse transmissions by the Postmaster General's Department, the Federal Executive sought information on the standards that had been decided upon in both the United States of America and the United Kingdom. R.S.G.B. have advised that neither types of transmission have been granted them as yet, but A.R.R.L. state—

"Here we have two sets of standards with respect to the use of frequency modulation in the Amateur

Bands. On 29-29.7, 52.5-54, and all bands above 144 Mc., frequency modulation techniques may be used, including the so-called wide-band system.

"For a one-year test, which began on 1st August, 1947, the frequencies 3850-3900, 14200-14250 and 28500-29000 Kc. have been opened to 'narrow-band frequency modulation' techniques. The Federal Communications Commission defines this as a 'system of frequency modulation where the peak deviation is limited to a value equal to or less than the maximum modulation frequency.' In other words, the band width must not exceed that occupied by an amplitude modulated signal of the same audio characteristics.

"Since 'practically anything' is permitted on the 11 Metre band, it should have included it in the above frequencies available for frequency modulation techniques. Incidentally, the Atlantic City Conference has decided on a new industrial heating

- (b) Standards of station design and installation covering basic principles, fire insurance requirements, safety standards, etc.

- (c) Reasons why all Amateurs should be members of the Wireless Institute of Australia.

NEW APPOINTMENTS

Sub-Editor of "Amateur Radio":

VK4ZU, Mr. H. T. MacGregor.

Asst. Sub-Editor "A.R.": VK4FN,

Mr. Frank M. Nolan.

YOUR ATTENTION PLEASE!

In order to save confusion and delay in routing of correspondence received in Box 2611W, G.P.O., Melbourne, your co-operation in correctly addressing all letters would be appreciated.

Federal Secretary:—

All correspondence dealing with purely Federal matters such as Editorials, Federal Notes, Policy of the Magazine and Regulations, should be addressed to the Federal Secretary.

Secretary, Victorian Division:—

All correspondence concerning VK3 matters only, should be addressed to the Secretary, Victorian Division.

Magazine Manager:—

All correspondence relating to the financial and distribution aspects of the Magazine.

Editor, "Amateur Radio":—

All correspondence concerning Notes and other contributions to the Magazine.

Federal QSL Manager:—

All correspondence dealing with QSL matters, applications for W.A.C. Certificates or Awards (or the VK3 Manager, if applicable).

Patriotic Fund:—

All matters dealing with Food for Britain food parcels, raffles, etc. to be endorsed as above.

CALL SIGNS

Alterations:—

VK2AKD—E. J. Paxton, 22 Powell

St., Kilarra, N.S.W.

VK2AKU—J. Georgeson, 6 Carlos

Rd., Artamon, N.S.W.

VK2ANT—F. R. Deppeler, 80 Kincaid

St., Wagga Wagga, N.S.W.

VK2ASD—S. T. Clark, Imperial

Hotel, Manilla St., Manilla,

N.S.W.

VK2FG—E. C. Medhurst, 46 Ultima

St., Caringbah, N.S.W.

VK2VI—V. J. Gay, 23 Centennial

Ave., Lane Cove, N.S.W.

VK3AT—Dr. A. F. Taylor, 108 Mande

St., Shepparton, Vic.

VK3SF—N. C. Hannaford, No. 1 Aus.

Tels. Course, Army School of

Signals, Balcombe, Vic.

VK3SO—B. L. McCubbin, 3 Kildare

St., Burwood, Vic.

VK5LR—J. Lester, 333 Brighton Rd.,

Brighton, S.A.

VK5KR—R. Bennett, 65 Federation

Rd., Port Pirie, S.A.

frequency of 27120 Kc., which we mean our 11 Metre band will some day be 26960-27230 Kc. I am glad to say Australia and New Zealand gave notice of its intentions to permit Amateur sharing of this band, as in the American Region."

YOUR ASSISTANCE PLEASE!

In order to give full effect to Motion 41 of the last Federal Convention, the Federal Secretary is still awaiting further information regarding the names of those Amateurs who paid the supreme sacrifice in the 1939-45 war.

Furthermore, your comments and suggestions are awaited regarding the companion handbook to the P.M.G. Handbook for the operation of Amateur Stations. This publication will contain:—

- (a) Guiding principles for the efficient operation of Amateur Stations.

New Issues:—

VK2ADP—A. D. Potter, 315 Piper St., Broken Hill South, N.S.W.
 VK2MC—W. R. Attwood, 34 Cram St., Merewether, N.S.W.
 VK2MD—R. M. Cumming, Jnr., "Kinross," 5 Gower Cres., Summer Hill, N.S.W.
 VK3NV—M. J. Ryan, 8 Bain Ave., Merlynston, Vic.
 VK3PL—J. F. Isaac, 72 Young St., Frankston, Vic.
 VK3PS—E. Salamy, 23 Henna St., Warrnambool, Vic.
 VK3SP—R. H. Sears, 32 Manifold St., Colac, Vic.
 VK3XH—C. H. Hyatt, 56 Darebin Rd., Heidelberg, Vic.
 VK3XO—L. A. Paul, 160 Separation St., Northcote, Vic.
 VK4DB—D. S. Brown, 72 Watson St., South Bundaberg, Qld.
 VK4LM—L. E. H. Mallinson, 62 Prince St., Annierley, Qld.
 VK5WA—R. A. Warner, 60 Charles St., Forestville, S.A.
 VK6AI—W. J. Middleton, Esplanade, Port Hedland, W.A.
 VK6BH—B. G. Hudson, 268 Newcastle St., Perth, W.A.
 VK6CF—C. L. Farkas, 165 Railway Rd., Gooseberry Hill, W.A.
 VK7RY—F. E. Nicholls, 21 Haig St., Newtown, Tas.

Call Signs and Countries

(Continued from page 9)

ZE Rhodesia, Southern
 ZK1 Cook Island
 ZK2 Niue
 ZL New Zealand
 ZM Samoa, Western
 ZP Paraguay
 ZS Union of South Africa
 ZS3 South West Africa
 ZS4 Basutoland

NO CALL LETTERS ALLOTTED

The following have no call letters allotted as yet:—

Aldabra and Andaman Islands.
 Bechuanaland, Bhutan, Bonin Is.
 Caroline Is., Clipperton Is. and Comoro Is., Corsica.
 Easter Is.
 Formosa, Franz Joseph Land.
 Galapagos Is., Guinea (Spanish).
 Ifni, Imo Jima.
 Jan Mayen Is.
 Kerguelen Is., Korea, Kuwait.
 Maldive Is., Manchuria, Marshall Is., Monaco, Mongolia.
 Nepal, Nicobar Is.
 Okinawa, Oman.
 Palau Is., Phoenix Is. (British).
 Principe Is.
 Rio de Oro, Ryu Kyu Is.
 Sao Thome Is., Cardinia, Somaliland (Italian), Spitzbergen, Svalbard, Swaziland.
 Tannu Tuva, Tokelan Is., Trieste.
 Union Is.
 Volcano Is.
 Wrangel Is.
 Yemen.

FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Several cards are to hand for VK1 stations. Some are addressed to Norfolk Island. Many relate to QSOs during the first half of 1947. Has anyone any ideas where the owners may be found?

An attractive card notifies the holding of a hamfest in Stuttgart by the German listening fraternity. A superscription on the cards reads: "OMs please don't forget the German Hams. Greetings from the German post-war hamfest." Of course it is a typographical error but it is peculiarly apt.

Another one for the philatelist—Helene Kehler, ex-D3FBA (24b) Husum-Nordsee, Kampsiedlung-Lund 17, Schleswig-Holstein, Brit-Zone, Germany.

The QSL address for the N.E.I. is: N.I.V.I.R.A., Postbox 190, Batavia.

The Radio Club Argentino asks for reports on the signals of their station "LRA1, Radio del Estado," broadcasting on 9690 Kc. All reports will be acknowledged. The address of the R.C.A. is A. V. Alvear, 2750, Buenos Aires.

A groan from James H. Dooley (W2JCT) who operated XU1YR, at Chin Wang Tao, Hopeh Province, China, from approximately October, 1946, to June, 1947. Jimmy Dooley says that out of 80 VKs contacted and QSLed, so far only 4 have sent him cards. Seems poor recompense. Dooley is now back at his home address, 405 Berkeley Ave., Bloomfield, N.J., U.S.A.

Dave Medley, VK3AE, ex-VK3MJ, advises that Box 234, P.O., Darwin,

N.T., will be sufficient address for any cards for stations in that area.

Leo Maguire, long time pre-war VK3KM, of Wodonga, has turned up again as VK6MG, at Manjimup, W.A. Hope contact you one day when 7 Mc. is clear Leo.

The new QSL Manager for the British Zone of Occupation in Germany, is D2DS, Capt. J. Howe, R. Signals, Exits and Entries Branch, Zonal Executive Offices, Control Commission for Germany, Bad Salzungen, 100 HQ, C.C.G., British Army of the Rhine. That's the full address and Capt. Howe requests that cards for D2 calls should not be sent to any of the German Bureaux operated by the Radio Clubs.

News from Denmark states that to August 20, the record for 56 Mc. work in OZ belongs to OZ7G who worked F9BG, at Toulon, France, a distance of 850 miles. Other contacts were with GM8MJ, G6KX, 11DA, F8QL, HB9CD, F8OL, G2VH, G5BY, G3YH all over the 500 mile distance. They state that the stations doing the best work are using 50 watts to beam antennae and excellent German V.H.F. superhet receivers. Their summer camp at Fuen was a great success this year and included visitors from England, Norway, Sweden. Currency restrictions prevented many other foreign amateurs from joining the Danes in the celebrations attending the 20th anniversary of the foundation of the E.D.R.

Victorian stations please do not forget to drop that envelope to Graham Roper, VK3ZB, 26 Lucas St., Caulfield, S.E.8, for your cards.

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Popular Mechanics	£1 3 6
Mechanix Illustrated	£1 2 0
Scientific American	£2 0 0
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Science Digest	£1 3 6
American Photography	£1 6 0
Camera	£1 13 0
Popular Photography	£1 6 0
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Practical Wireless	£0 9 0	Wireless Engineer	£2 0 0
Short Wave Magazine	£1 5 0		

AUSTRALIAN

Amateur Radio	£0 6 0	Radio and Hobbies	£0 6 6
Australian Radio World	£0 10 6		

JUST PUBLISHED:—The Australian Short Wave Handbook — a handbook of Call Signs and Short Wave technique, specially compiled for Australian conditions. Published by Radio and Hobbies. PRICE: 2/-. Postage 2d.

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FIFTY AND UP

COMPILED BY VK3QO

VK5 AND VK2 CONTACT

The following details from VK5 are a bit late, but better late than never! On the night of Tuesday, 23rd September, VK5 50 Mc. enthusiasts received another visit from three of the VK2 gang, all from well north of Sydney; Newcastle, Cessnock and Woyang being represented.

Towards evening VK5RV and VK5GF, listening on 28 Mc., noticed the skip shortening; DX dropped out and VK2s started to come in. As the skip shortened and the VK2s dropped out, Jock and Max took a dive down to 50 Mc. and started calling CQ DX. At 1825 hours VK5GF was rewarded with a call from VK2ADT (R5 S9) who reported Max at R5 S8. Experiments were carried out with both vertical and horizontal polarisation and with beams against half-wave antennae "straight." Results were much in favor of the beam, but polarisation made no difference.

At 1835 hours VK5RT switched on and heard VK2BZ calling CQ "Six." Resultant QSO was at R5 S9 both ways. At 1840 hours VK5RT and VK2ADT contacted at R5 S9 both ways and five minutes later VK2BZ, at R5 S9, was QSOing VK5GF at R5 S8. Later again VK5RV contacted

VK2BZ R5 S9. Jock's signal was down at Newcastle however, VK2BZ having some difficulty in reading the call.

At 1945 VK2OC and VK5RT contacted, beginning at R5 S9 but signals both ways began a rapid fade and within about five minutes faded right out. Other reports were VK5RV heard VK2ADT, VK5CU heard all three and called VK2BZ on phone with his key open. VK5QR heard VK2OC just as signals were on the way out. VK5BQ heard all three on a t.r.f. receiver—not super-regen either. At the Adelaide end VK5GF and VK5RT were using beams and VK5RV a half-wave vertical. At the Newcastle end VK2BZ and VK2ADT used beams and VK2OC a ground plane.

VK5LJ reports that American commercials are coming through on 40 Mc. at good strength.

Around this date VK3XA, VK3EH and VK3RR heard weak fading signals, which when they peaked and the voice could be copied, seemed to have a distinct American twang. No call signs were obtained.

On 12th and 13th October at 2115 to 2130 hours, VK3RR heard a weak signal on about 50.3 Mc., so called QRZ. After several overs like this, VK3RR managed to make out that a VK2 was calling him but signals then faded out.

VK3BQ, VK3RR and VK3VL are keeping a close watch on the 50 Mc. band all during each day and they also call at 1200 hours and 1500 hours.

Items of V.H.F. interest, personalities, DX, "bricks," etc., can be sent direct to VK3QO, 32 Redesdale Rd., N.21, Victoria. Include your name and address. To all our contributors, thanks OMs and keep up the good work!

50 Mc. JOTTINGS

The VK2 boys are still acting very coy and shy and will not send us any news, so we can't print it!

50 Mc. activity in VK3 appears to be increasing, perhaps due to the fact that the DX should be starting soon. Stations active include VKs 3RR, 3BQ, 3EH, 3BD, 3HK, 3VL, 3XA, 3LW, 3GE, 3KU, 3DH, 3ADF, 3HO, 3HT, 3BW, 3YJ, 3VZ in the suburbs, and 3GM, 3ZL and 3SE in Ballarat, and 3KX in Colac. These latter work Melbourne boys regularly.

In the North-West Zone 3TL, 3OA, 3BM and 3CE are after 522s and 3LU is very busy making a 50 Mc. rig. According to 3YW the Western Zone boys are getting busy as follows: 3GN is building a converter for 50 Mc. and hopes to take it to Maryborough on 9th November. 3TA and 3WC, in Horsham, are both all set on 50 Mc. Byron has a ground plane antenna, and 3WC a three element rotary, so any 50 Mc. signals tooting

round the wheat lands should be well caught. 3AKW at present has no gear but hopes to soon, so keep the idea brewing Bill. 3YW has been heavily infested with the bug, and built himself a super for 50 Mc., and at present has a 50 Mc. Tx spread out on a breadboard. Next idea is to compress it into a 7" x 5" chassis (crazy, he knows, but who cares) and also hopes to use Rx audio amp. as modulator.

On Sunday, 12th October a Field Day was held by the VK4 gang, operation being on 50 and 166 Mc. The function was arranged mainly as a means of introducing Ipswich Hams to 50 Mc. work and to try and coax some of them on to the band. VK4ES and party linked up with the Ipswich crew and carried out tests from the Minder-Marburg district. Contact was made with most of those on, although results were a little below expectations. Ipswich Hams present were VK4WS, VK4O, 4HG, 4MW and 4CH (hope that includes everybody). The usual crew was on in Brisbane with 4RT, 4KB and 4JY at Mt. Gravatt; 4CU at Toowoomba; 4XG, 4FB and 4ZU at Mt. Nebo, also 4AF was operating from Clifton and during the morning was putting in a beautiful signal at Mt. Nebo but no contact resulted, unfortunately.

Active interest is now being shown by several of the country stations in VK6. 6RL, of Northam, is on between 7 and 8.15 p.m. nightly one week, and between 8 and 9 a.m. daily on alternate weeks. Has not yet been heard in Perth but Ralph intends to get through or over the ranges even if he has to build a beam. A three element is already under construction.

Others reported to be active are VK6FN, of Pt. Hedland, and VK6WG and VK6HT, of Albany. If this report be true how about arranging some skeds with Perth via the 7 Mc. band? No news yet from VK6FB, of Mulewa, but Frank is probably too busy getting ready for this band to let us know how he is getting on.

Round the city VK6PC, VK6GB, VK6HM and VK6LW still active nightly and a newcomer, VK6MW, has joined the ranks. Does anyone know what's happened to 6BK or 6DD? Neither have been heard for many months on this band. Rumour has it that 6KW or 6DF may be joining 6LW on 166 Mc. He won't mind it!

No news to hand of 50 Mc. activities in VK7.

166 Mc. ACTIVITY

In VK3 the band has been fairly quiet only 3RR, 3AKI, 3LS, 3MM, 3MB, 3ACM and 3EM are active.

3ACM has got his big rig going on 166 Mc. Starting off with a 6SJ7 v.f.o. on approximately 1.75 Mc., Colin uses then a 6V6 doubler, another 6V6 doubler, then a 6L6, an 807 doubler into an 815 tripler which

SUCH NICE PEOPLE

By "GREMLIN"

The shouting and tumult has barely died, 'smatterfact only reached about E layer, when smack in the peeper area arrives the thanks for Hams. Thanks from the I.T.C. at Atlantic City as a mark of world appreciation of Hams' war-work—minus 50 Kc. on 14 Mc. band. What's it matter if we do look like getting a fair whack of living space around 21 Mc. Twenty was our dog fight and how we loved it. I've never gone much for this ill wind business. Still, I don't suppose we can blame the powers that be in VK. They have handed us 50 watts and generally eased restrictions. That's something.

About this proposed shared portion on 14 Mc. What say we put all the VK2 AT20s in that area? That, plus a few W kilowatt jobs should hamper the propaganda and V emitters.

I guess you fell in like me. Bet I know what you thought about as you waded through mud, sand, tropical splendour and or files. Betcha it had something to do with the beaut gear you were going to get for next to nothing from surplus stocks. Did you too, pipedream about a beaut blonde fairy sliding up in a straight eight and saying "Thanks Hams, I guess we should encourage your games. Now help yourself first, it's nice and cheap and what's left can go to the big disposal wolves." I bet you did. It's even nice to think it's still not too late, although the wolf rides the straight eight.

And that Don, 2NO, is the reason I stopped at "Such Nice People." Where you take it up is just too

drives an 815 in the final with 50 watts input with about 65% plate efficiency. 3MB fits Ham activities in with building a house and swotting! 3GN and 3IQ, in the Western Zone, are building some simple 166 Mc. gear and intend doing some cross town work.

166 Mc. in VK5 is in the doldrums. 5JD has been obliged to build a receiver for 7 Mc., so he can hear some signals.

During the field day in VK4, 4AW, 4HR and 4TR were all heard at Mt. Nebo, a distance of 20 miles from Brisbane. This is the best work yet on 166 in VK4.

1400 Mc. AND ALL THAT

340 has been testing his three 446Bs on a dynamic tester; result—two "goodies" and one definitely not so good. Moral seems to be to insist on having them tested before taking delivery. The plate currents of the three tubes were about the same so the trouble seems to be due to "spotty" emission. 3CU is reported as having five "lighthouses." Hope they are all good ones!

obvious—I've been shopping. You know Don, you have something with that "Honest Reporter" station and recorder business. Some blokes would get a shock if they heard their punk sigs returning, to say nothing about their technical statements. Or perhaps I should say, I hope they would be shocked. Yes, I agree, some blokes take a lot of convincing everything is not in order at home base. And don't think that technical "monkey chatter" is confined to VK2. For the next few weeks blokes, you can splash and click and generally go to town in a big way—and probably get away with it. Truth is I'm doing a bit of revamping on the old receiver—I don't believe in fairies, 'specially blonde sorts. You may be unlucky in between vamps. These were.

2BT, solid hum spoils your phone clicks from 2YC, 3AHR, 3ZW, 2NH and 3LD. 4HG and 3IS splashing.

3SB, your quality is f.b., but you ooze a tiny bit outside the carrier on the low frequency side. You sound a particular sorta guy, so thought you might like to know. Some other's I wouldn't bother telling, they would not worry about such little things.

3LG is warming up for the CQ stakes. If you can't do better than 22 unbroken, retire OM. 3DN, a spot of downward modulation there I think.

Congrats 5KL on your fine 50 Mc. DX. There you are blokes, populate this band and do a spot of pioneering. It shouldn't be grabbed awhile yet.

So long for now patients, see you in some disposal joint, I guess.

RADIOTRON RECEIVING TUBE CHARACTERISTICS CHART

The Radiotron Receiving Tube Characteristics Chart, issued by the Amalgamated Wireless Valve Co. Pty. Ltd., is one of the most comprehensive charts yet seen.

Published in booklet form 11" x 8" and containing 34 pages and lists almost every type of receiving tube made by A.W.V. as well as types manufactured by the American Company, ranging from the 1.4 miniatures to the latest 6.3 miniatures, as well as the loktal range.

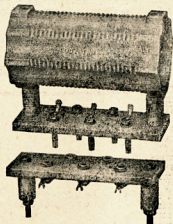
The chart commences with a classification of Australian types followed by characteristics and ratings of Australian types. Then we have a complete classification of all types of Radiotron tubes, followed by a complete characteristics chart of all Radiotron tubes, and a socket connections chart.

The valve substitution directory is the most comprehensive list of possible substitution of practical every type of Radiotron receiving tube.

Amalgamated Wireless Valve Co. are to be congratulated on the matter contained in this booklet and the manner in which it is set out.

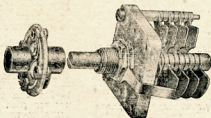
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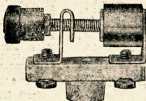
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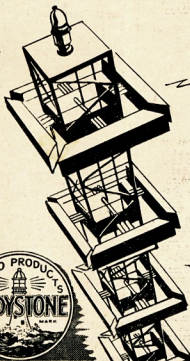
BANDSPREAD TUNING ASSEMBLY

This outfit consists of a Cat. No. 529 Flexible Coupler and a Cat. No. 580 Air Dielectric Condenser of 15 pF. maximum capacity. The whole assembly is ideal for fine tuning and band-spreading purposes or for low powered transmitters.



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DIVISIONAL NOTES

NEW SOUTH WALES

Secretary: Peter H. Adams, VK2JX
Box 1734 G.P.O., Sydney.

Meeting Place: Science House, Gloucester and Essex Streets.

Meeting Night: Fourth Friday of each month.

COALFIELDS AND LAKES ZONE

2TY now using a V beam on 28 Mc. and works 2ADX in Maitland on 166 Mc. Congrats on a YL junior op. — 2TZ, an old timer, threatens to make a noise again; making 28 and 14 Mc. beams. — 2VU, also from Singleton, on 7 Mc. phone, listens on 50 Mc. and works a few cross band, should be there shortly. — 2KZ still working Ws for a W.A.S. on 28 Mc., surprises the Yanks when he states the Rx is a 2 tuber. — 2KF heard chasing the DX on 14 Mc., let's have some news. — 2PZ QRL and uses 7 Mc. phone during the week-ends. Only working on jobs for the higher frequencies. — 2MK inactive for past few weeks, building new rig and 50 Mc. converter. — 2ADT was in the break-through to VK5 on 50 Mc., also works 50 Mc. to Sydney and the Blue Mountains; a 3 element beam vertical or horizontal does the job. Was in VK phone contest and worked XE1A on 7 Mc. phone.

2YL regular again, 14 and 28 Mc. are the main bands, also plays with 50 Mc. 121 countries post-war, and for the worried ones, HSISS does QSL, also TF3A came to light.

WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI, Sundays—

1100 hours E.S.T., 7190 Kc.
2000 hours E.S.T., 50.4 Mc.

No spot frequency checks will be available from VK2WI.

VK3WI, Sundays—

1130 hours E.S.T., 7196 Kc.

VK4WI, Sundays—

0900 hours E.S.T., 7100 Kc.
0900 hrs. E.S.T., 14358 Kc.
0900 hrs. E.S.T., 52,004 Mc.
Frequency checks are given two nights weekly. Hours are announced during the Sunday broadcasts.

VK5WI, Sundays—

1000 hrs. S.A.S.T., 7195 Kc.
Spot frequency checks may be obtained from VK5DW on Friday evenings on the 7 and 14 Mc. bands.

VK7WI, 2nd and 4th Sundays—

1030 hours E.S.T., 7174 Kc.
No frequency checks are available from VK7WI.

— 2OC on 50 Mc. nightly from 7 p.m., broke through to VK5. — 2TX is ready for a comeback. — 2RU is regularly on 50 Mc. — 2AEZ mainly on 14 Mc. and getting ready for 28 Mc. — 2AI mainly on 14 Mc. too, how about some news o.m. — 2KR on 7 Mc. phone. — Any notes from the Gosford area would be appreciated.

WESTERN ZONE

2BT most improved station this month. Built field strength meter, pruned antenna, and reshaped Rx. — 2WH still working DX on 14 Mc. and has a V beam which is not too good as yet. — 2II is using co-ax vertical on 28 Mc.; to quote Max: "Weak in all directions." — 2NS has re-designed shack, everything in its place (how long?). — 2ACU now at Coonamble working DX on 8 feet wire as an antenna. — 2AMR still working DX on 14 Mc. — 2HZ is shifting to new shack. Rx should be finished for 1950 VK DX Contest! 2LZ heard on 7 Mc. and xtal controlled. We are worried Con, why xtal? — 2LY re-building everything, some more power? — 2QA has new house and should be heard more in the future.

N.S.W. ZONE OFFICERS

North Coast and Tablelands: 2AFP at Casino, Newcastle and District: 2FP at Hamilton. Coalfield and Lakes District: 2YL, Cessnock. Western: 2QA, Nyngan. South Coast and the Tablelands: 2ANN, Bega. Southern: 2OJ, Albury.

VICTORIA

Secretary: A. B. D. Evans, VK3VQ.
Box 2611 W.G.P.O., Melbourne.

Meeting Night: First Wednesday of each month.

Meeting Place: Radio School, Melbourne Technical College.

The Victorian Division desires to advise that the official weekly broadcasts of VK3WI of news, activities and items of interest to all Radio Amateurs will be each Sunday morning at 1130 hours E.S.T. on a frequency of 7196 kilocycles. This schedule will be adhered to until further notice and it is further advised to listen for any additional broadcasts as advised by the communications manager and operator of VK3WI, Mr. A. E. (Arthur) Tinkler.

Monthly activities in Melbourne have been marked by much important business and decisions on the part of councillors and members concerning this Division. At a special Council meeting held late in September, to debate the ways and means of appointing a full-time paid secretary to handle the business of the Division, it was found that owing to the in-

ability of financing a male secretary it was resolved to recommend to the October general meeting that a female secretary be appointed at a salary of £5/10/- per week plus 5% on all subscriptions. Later in the evening the necessity for increasing subscriptions to help meet a paid secretary's salary was discussed.

The general meeting held on 1st October admitted several new members and after correspondence had been dealt with Mr. R. H. Cunningham (3ML) in the chair, introduced Mr. H. Kay, of the P.M.G.'s Depart-

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ment, who gave an interesting talk (illustrated with slides) on the subject of Frequency Modulation.

During general business the Council's recommendation for a female secretary was put to the meeting and members expressed their conformity of opinion to the absolute necessity for this appointment, and on a motion, the meeting carried this important decision (there being only a few dissenters). The matter of increasing subscriptions was then partly discussed and for want of time was left over for discussion at a later date.

Council at a following meeting voted a grant of £75 to the Technical Advisory Committee for the construction of a Test and Demonstration Bench in the Institute Rooms. This is the first project in their plan for installation of modern technical equipment. A further grant of £50 was voted for immediate purchase of some items of essential equipment.

Promise of a great deal of further interesting and most useful disposals gear becoming available was outlined by Mr. H. Kinnear (VK3KN) and Council confidently gave the OK for the purchase of gear to be made available to members.

Further details of disposals gear will be announced from the weekly broadcasts of VK3WI.

TECHNICAL ADVISORY COMMITTEE NOTES

Executive.—At the last meeting of the T.A.C. Executive, a discussion on budget for future laboratory equipment was held, and it was decided to submit to Victorian Council a list of equipment and instruments recommended for a two-year period. The meeting is each third Tuesday.

V.H.F. Group.—A discussion on various types of V.H.F. receivers was conducted at the last monthly meeting of this group. VKs 3EM and 3LS brought along super-regen. receivers and a great interest was taken in a V.H.F. band-switched converter built by VK3VZ. This converter was switched for 28, 50 and 166 Mc. and will be the subject of an article in "Amateur Radio" in the near future. VK3XA produced some absorption type wavemeters, which cover from 50-400 Mc., and indicated that these would be made available for laboratory and members' use. 3XA is to be commended on his prompt action in securing these meters for T.A.C. use. Meeting: 2nd Wednesday.

Receiver Group.—Mr. George Neilson continued his discussion on selectivity in receivers at the last meeting of this group, which was appreciated by all present. At the next meeting, Mr. Ivor Morgan, VK3DH, is to present a lecture on ways and means of coupling antenna and receiver for maximum signal to noise ratio. This should prove to be an excellent night, so don't miss it. Meeting: 4th Wednesday.

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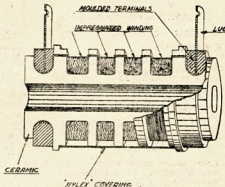
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Modulation Technique Group.—Mr. Bob Sandon, VK3ABS, is to deliver a lecture at this group's meeting on equipment suitable for Narrow Band Frequency Modulation on the 27 Mc. band. All interested in phone and the new releases of f.m. and pulse are invited to come along to these meetings. Meeting: 3rd Wednesday.

General Meetings.—A most interesting lecture on Frequency Modulation was given by Mr. Harry Kay, of the P.M.G.'s Department at the Oc-

tober meeting of the Division, and was appreciated by all in the manner it was presented, with the aid of Strip Film diagrams. The lecturer proceeded from the fundamentals of f.m. to the more complex nature of the subject, but it is felt that all who were present, will have a much better appreciation of the subject and its potentialities than before. It is hoped to be able to publish the substance of this lecture in "Amateur Radio." Mr. Moriarty, of the P.M.G.'s Department, is to lecture on Propagation at the November meeting of the Division. Meeting: 1st Wednesday.

NORTH-WEST ZONE

The Secretary has sent round a newsletter to every zone member and a request for personal pars. In accordance with the convention resolution that we endeavour to arrange for a car load of our members to attend adjoining zone conventions, we are arranging for a car to go to the Central Western Zone meeting at Maryborough in November. Members interested, please contact 3TL.

The new 14 Mc. 3 element rotary at 30A exhibits excellent directive characteristics on the Rx, but Ian's XYL (Jean) claims that the prospects of the strawberry crop are down about 3 db since the said beam was erected above! Ian is planning a new Rx for 14 Mc. — 3CE has installed a new antenna coupler, cut so as to be self-tuned, and it has improved his transmission to a marked degree. — 3TL is making steady progress on the 28 Mc. outfit. Treb tried 14 Mc. during the month but decided a pre-war Rx was N.G. on the post-war band. Has replaced his 801s with 800s for 100 watts. — 3BM has got his big V beam going on W land on 14 Mc. and is usually reported "strongest VK phone on the band." Bruce is still looking for another mile of wire to finish the antenna system of 11 33-degree Vs, 840 feet per leg.

WESTERN ZONE

Western Zone hook-up took place on Sunday, 12th October at 10 a.m. (7050 Kc.). Stations reported were 3GN, 3YW, 3EP, 3AKW, 3ATR, 3IQ and 3AGB. Main discussion centred on the next convention and the proposed increase in W.I.A. fees.

The next convention is to be held at Maryborough on Sunday, 9th of November. The main event will be a 50 Mc. field day, which should tie in nicely with the 50-166 Mc. Field Day in Melbourne. Consideration will probably be given as to the advisability of having more field days and less conventions in the zone as it is hard for members to get from one end of the zone to another.

In reference to the proposed increase in W.I.A. fees to cover the cost of a paid secretary, while it was felt that the increase was inevitable, and the appointment of a paid secretary very necessary, we considered

that the country member was being treated harshly by bringing his fees to the same level as the city member. He does not, and cannot, get the same service from W.I.A. as his city brethren and so does not feel disposed to pay the same fee. The proposed refund of 5/- per member to finance the zones was considered far too high, 2/6 will finance this zone (N-W zone consider 1/-) easily.

3GN had a glorious hum on his carrier during the zone hookup; better park that "108" v.f.o. on the shelf George. — 3IQ is making the most of his new call and has some ideas for us re R.S.G.B. food appeal.

— 3AKW has scrapped his cathode modulation and put in plate modulation, carrier much cleaner.

3AX very busy at present, and not too much time for radio, however is still knocking a few off on 14 Mc.

— 3EP is very thrilled to get a South African QSL, this makes him W.A.C., congrats. — 3YW while testing the transmitter blew a fuse, examination disclosed what had been a nice big spider parked across the plate by-pass condenser. — 3ATR, 3WC, 3TA and 3AGB are a bunch of busy blokes with nothing to report, so no notes mean more yarn!

Well gang that's all the things this month, we hope to see you in person at Maryborough next month, when maybe that villian, Willy (3XC), will arrive so the important things to remember are:—

1. Convention to be held at Maryborough, 9th November.
2. Build and bring 50 Mc. gear to Maryborough for the field day, and help the boys with V.H.F. ideas.

"FOOD FOR BRITAIN" APPEAL

The Committee have, since the last notes, despatched another 25 food parcels, now making the total 150. Parcels are arriving at regular intervals in England, and R.S.G.B. HQ are being kept very busy balloting for and re-distributing them. The Committee have received many letters from grateful recipients, which for want of space, we are unfortunately unable to publish. We can only say that each and every lucky one all wish to convey their deep and sincere gratitude to all concerned. We hope that donations will not fall off, but will continue to roll in with undiminished regularity.

We are very pleased to announce that Radio Corporation Pty. Ltd. have generously donated one of their new model broadcast receivers to the Committee, to be included in the big raffle we have previously made mention of. We here wish to record our gratitude for their most magnanimous gift.

At the last General meeting, a type T1092 transmitter and a Taylor T20 triode were raffled, and the draw was made by our lecturer, Mr. Harry

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Kay. The T1092 was won by Mr. T. B. Clarke and the T20 by Mr. W. H. Ross, and yielded the sum of £10/7/-. The usual box collection, although not as good as previous meetings, realised the sum of £6/13/9, making the total for the night £17/0/9. The total receipts are now £173/16/2, expenditure on parcels £137/10/7, and cash in bank and hand £36/5/7.

Please contact your Zone Organiser regarding details of raffles, donations, etc. They will be pleased to receive your donations however small—every little helps. The organisers are as follows:—

N-E Zone, Howard Wohlers, 3YV.
N-W Zone, Ian Adams, 3OA.
C-W Zone, Kevin Duff, 3IQ.
S-W Zone, Bruce Plowman, 3QC.
East Zone, Graham Colley, 3QZ.

Watch these notes for details of the big raffle.

QUEENSLAND

Secretary: R. Thorley, VK4RT, Box 638J, G.P.O., Brisbane.
Meeting Place: State Service Building, Elizabeth Street, City.
Meeting Night: Last Friday in each month.

There has been nothing of any special significance happen in the VK4 Division during the past month, unless it be 4AP's fine effort in WAC-ing in less than two hours during the

DX Contest on 28 Mc. 4RC has also been in the thick of it, and reports fairly good conditions on the band.

Whilst speaking of DX we received a letter from ex-VK4PR, on Guam with the U.S. Forces, in which he enthused over the gear in use over there, and also passed on the information that anyone waiting for cards from KG6AV/VK9 need not have any fears—the QSL situation is well in hand there. He reports that VK4 signals seldom seem to get through over there, but he would like to have a yarn to any of the boys whenever he does get the chance on 14 Mc. A letter from the following would also be welcomed—VKs 4KG, 4TR, 4PD and 4VJ. His address is W. J. Rafter, Box 467, Marama, A.P.O. 284, Guam.

In response to 4FN's appeal for contributions to the Food for Britain Appeal the fund received a boost, the amount in hand for the next shipment being £13 of which £3/10/- was collected per medium of the hat passed round for a "bob-in." With 38 members present, my arithmetic may seem screwy, but at least the error is on the right side of the sheet.

As a variation from the auction sale of last month, two Disposals receivers were balloted for, the winners being 4KB and 4AU. Six racks also went off in the same manner, the demand far exceeding the supply.

Incidentally, ALL members have been circulated about this material, so any hold up, etc., has been in the mail. We hope to take delivery of some 522s before this appears in print, but apart from these items we are still in the dark as to other gear.

As September marked the end of six months service by the present Council, Secretary 4RT presented a detailed account of our position, and following are some of the more important items. The membership has increased from 69 to the present record of 143, made up of 71 City full members and 10 Associate members, and 58 Country and 4 Associates. There are in addition 7 members awaiting election. (The 150 mark has been left behind since these figures were compiled.) The financial position has likewise expanded from a credit balance of £10 (AFTER the delegate's expenses had been paid) to a credit balance of £45, plus the addition of a duplicator to the Institute's assets. General Revenue was £82, whilst the Disposals receipts amounted to £206.

The activities of the various departments was recounted, comprising QSL, Library, Station Manager, and Publicity, whilst the meeting was reminded of the services of the Traffic Manager "whose punctuality for receiving and passing traffic when most of us are asleep calls for special mention." Finally in closing, the

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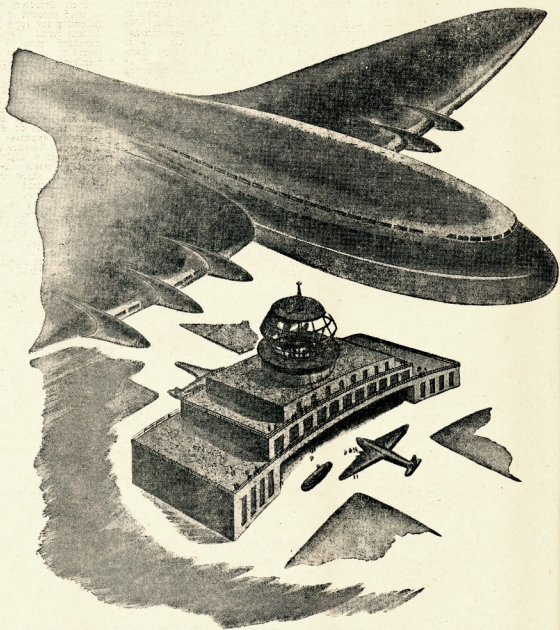
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Secretary thanked all for their efforts and expressed the hope that even greater efforts were called for if the present progress was to be maintained. The part played by 4WI in rebuilding the Institute was a landmark in the history of this Division, thanks to the untiring efforts of operator VK4FN.

Later in the evening those present were regaled by a lecture on "Airborne Radar," presented by Mr. J. Wheller. If "Regaled" does not seem the right word in the above sentence,

it is explained by the fact that you were not present to hear Johnny's lecture. Discussion took place regarding the Annual Dinner, and it was decided to move the date of same forward slightly in order to relieve the new Council of the responsibility for organising the function. At the moment it seems that the Dinner will be held in January or February which is a month or two earlier than usual.

After a great deal of discussion at the last Council meeting, the prize for the VK4WI QSL design was allotted to VK4RF whose entry met with the approval of the majority of Councillors. Congrats Fred, and how is Dalby getting along? All going well you will have received your prize of One Guinea ere you read this.

During the month of September we received a visit from Mr. Harry Kinnear (VK3KN), a past President and Disposals Purchasing Officer of the Victorian Division. A pleasant evening was spent by several Council members discussing various points of mutual interest to both Divisions, and Mr. Kinnear promised this Division help in Disposals purchases for either Division or both if necessary. All in all, the excellent relations between both Divisions were further enhanced as a result of 3KN's visit.

In closing we present once again the times and frequencies of VK4WI. Transmissions are conducted simultaneously on three frequencies in the 7, 14 and 50 Mc. bands, the spots being 7100, 14358 and 52004 Kc. The writer can't vouch for the exact frequencies, but they are pretty close to those given. Time of operation is 0900 hours on Sunday mornings, when announcements are made as to times for Frequency Checking Services for the ensuing week.

SOUTH AUSTRALIA

Secretary: E. A. Barbler, VK5MD,
Box 1234 K. G.P.O., Adelaide.

Meeting Place: 17 Waymouth Street, Adelaide.

Meeting Night: Second Tuesday of each month.

The general meeting of the S.A. Division was held on Tuesday, 14th October, when Frank Wreford (5DW) and Gordon Bowen (5XU) gave a very interesting and instructive practical demonstration of "Frequency Measuring." Frank was in charge of instruments and Gordon gave the commentary, the two combining very well together and never looked at any time like coming to blows.

The lecture demonstration commenced with the simplest method of frequency measuring, to wit, the simple absorption meter and from there to a calibrated receiver, next to a heterodyne meter to which a crystal was then added, thus arriving

to what is known as secondary standard calibration. A practical demonstration using WWV as a means of calibration checking was then given, after which Frank demonstrated the technique of frequency measuring as used by him on Friday nights as custodian of the frequency meter.

Opportunity was taken to demonstrate various crystal holders and the effect on frequency arising from different pressures and types of holders. Most of the audience shuddered every time Gordon said casually "drop the xtal in that holder Frank," and would have preferred to have heard him say "place that xtal gently in the holder Frank." An audible demonstration of a "creeping" crystal was then given and this portion of the lecture closed with a description of a Bendix frequency meter which was appreciated by all present.

At this stage to facilitate several experiments with a c.r.o., the lights were extinguished, which was a decided let up for me as I could not see to write any further notes (you beaut!), but I can say that this portion of the lecture was followed by all present with considerable interest. The lecture concluded after this and a vote of thanks was proposed by Pete Bowman (5FM) who said that the outstanding part of the lecture was the clearness with which the many points of interest were presented. Judging by the applause which followed the vote of thanks, the members present were in agreement.

Among the visitors at the meeting were W. Marshall (2XM) and 2XS mobile of the M.V. "Momba" which was in port on the day of the meeting.

The xtal used in the "creeping" demonstration was loaned by Dougall Whitburn (5BY) who reluctantly admitted ownership when challenged. If that crystal only "crept," I can do 100 yards in even time!

The desirability of listening to 5WI every Sunday was again demonstrated on the holiday week-end of October. Short notice from VK3 regarding supplies of co-axial cable necessitated an urgent reply to secure delivery. No time was available to contact the members individually so details were broadcast over 5WI. The response was gratifying but several Hams missed out entirely due to not listening to 5WI. As usual all the hard work of organising, etc., was shouldered by "Doc" (5MD) and when I visited him on Tuesday and knocked on the office door I heard the whirr of a grindstone and was in time to see the removal of the Barbler nose from it. Men like him get too little kudos.

It is with regret that the S.A. Division reports the untimely death of W. G. Brett (5WB). Members at the general meeting observed a one

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minute silence as a mark of respect to their late member, and the secretary also conveyed to the relatives, by letter, the sympathies of the W.I.A.

Bill Baker (5BQ) was lamenting at the meeting as he received a QSL card from China with a decent surcharge for incorrect stamping. What was fact Bill "winged" was the fact that he had already sent three cards to the particular Ham. Almost as cheap to use the telephone eh Bill!

The field day is on the go again and Ted Cawthron (5JE) is forming a committee. Last year's day will take beating Ted.

I suggest that during all lectures the programme arranger, Gordon Bowne (5XU), wander among the audience (as judging by the odd one or two who kept up an incessant "yabber jabber" explaining their viewpoint of the circuits, experiments, etc.), some good talent is going to waste or could it be that they are not as clever as they would like to sound. "Waxboring" is the technical name for it!

Judging by the gang lined up to pay their subscriptions at the meeting the treasurer, Cec. Baseby (5BZ), must have required a police escort after the meeting.

It appears that a paragraph in this column regarding Council members and supposed disposal equipment did not meet with the approval of some VK3 members. This is to be regret-

ted because the said paragraph was intended only as a satirical attempt to break down the foolish ideas of a small minority in VK5 who believed that Council members had the "open sesame" to disposals equipment. Had I been aware that my humble efforts were being perused by interstate readers I would have worded the paragraph quite differently to conform with interstate sense of humor. I would also have applied for a rise in salary having enlarged my circle of readers. My friend "Quentin" once told me that when one became a correspondent from a duty and no salary angle, one deserved to be criticised. May be he was right.

It has been suggested that I write a few things about some of my Amateur friends in an endeavour to brighten up this column. When I suggested that if I wrote some of the things I know about my Amateur friends, I would not have any friends for long, nobody appeared very concerned. Taking my tools of trade, a well-chewed pencil and a bullet proof vest I sallied forth and can now report—I know that:—

George Ramsay (5GD) and Frank Wreford (5DW) were heard on 28 Mc. recently telling each other just what they would do to the DX when it broke through and during the three hours they were tied up together, signals from practically all parts of the world were coming in at 59.

Ross Harris (5FL) has an automatic CQ caller which he switches on

whilst he makes his early morning cup of tea. I also know where some of the material, of which it is constructed, came from. Naughty!

Doc Barbier (5MD) sold the idea to a VK5 Ham to come down to 28 Mc. and then calmly "pinched" all the DX from under the said VK5 Ham's nose.

Bert Brooks (5KG) is using an S9er and is more than pleased with it, and the same goes for quite a large number of VK5 boys.

A good many VK5 boys are not very truthful with their reports on signal strength and quality. Misleading reports do more harm than good and no regular guy will take exception to true and helpful reports.

Gordon Bowen (5XU) is Church Organist at Kent Town Methodist Church, but that fact does not prevent him from using the same sort of language all Hams use when local QRM rises to a peak just as the DX starts rolling in.

One or two of the VK5 boys on 28 Mc. are over-modulating at times, and as they can work all the DX they want without over-modulating, it all seems so unnecessary.

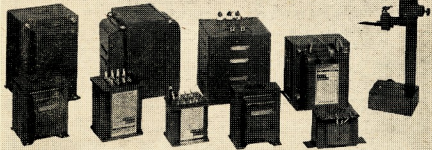
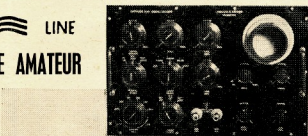
The Secretary and Treasurer put a whale of a lot of work into the W.I.A. at the end of each year, especially with some of the "dillpots" who apparently think that a reply to their letter should be posted twenty minutes after the Secretary receives it.

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WESTERN AUSTRALIA

Hon. Secretary: W. E. Coxon, VK6AG, Howard St., Perth, W.A.
Meeting Place: Builders' Exchange, St. George's Terrace, Perth.
Meeting Night: Second Monday in each month.

The October meeting, held on the 13th of the month, was an outstanding success. The attendance was larger than ever before, seating accommodation being all taken and tables had to be pressed into service. This speaks well for the manner in which the monthly meeting night is being conducted.

The business was dealt with promptly and advice was given members for their orders for SCR522A Transceivers, ex-Queensland Division were to be fulfilled. This was welcome news to those having orders in for them, especially coming on top of the recent purchase of Bendix Transmitters, and receivers locally. A limited number of Petrol Generator sets were also available for those who had ordered them.

The general business session was followed by firstly a continuance of 6LW's talk on frequency modulation. This was followed closely by all present and proved most interesting. 6AG then gave a demonstration of the latest Flying Doctor Transceiver which had included more new and some very interesting constructional changes departing from the conventional. This concluded the meeting with everyone looking forward to the next.

PERSONALITIES

6BW is back in town once again. Mick is like the proverbial "Flea in a bottle"—here, there and everywhere. — 6TX is a dark merchant these days. Not seen or heard of for several weeks. — 6WL is back in Brookton after a visit to the Nullabor Plains. Paid us a flying visit when in Perth. Les also seems to have other interests apart from Amateur Radio. — 6AH has been on a well-deserved holiday. Stan was even off the string, having left 6MH holding the fort at Wiluna. — 6AL, a call not heard post-war yet. Arthur tells us he has been listening to the 7 Mc. gang on his new midget Communications Receiver model MCR1, and reports excellent reception of Perth Hams at Bunbury.

6KE has at last seen the light and has constructed a 28 Mc. wide-spaced rotary beam and was heard working some good DX with it too. — 6RU heard going great guns in the DX phone contest. We believe he did pretty well too. — 6HL is another consistent 48 hour non-sleep bird, calling "CQ Contest" and doing fine. — 6FL is always there when contests are around. — 6KW, one of those that gave the DX away during contests. A busy man

on ex-disposal Bendix gear. — 6DF also keen on converting disposal gear to Ham uses. We believe that Maurie is getting together a f.b. portable outfit. — 6YZ is a consistent 7 Mc. enthusiast, keeping the 7 Mc. band warm.

6DD back on the air again after an absence of three months. John has a super v.f.o. and we believe it really works. — 6LM a real local rag-chewer lately. What's wrong with the DX bands Lionel? — 6WH fairly quiet of late and we are wondering what Ted is up to. — 6WS making structural alterations to his beams. With his new S9er, "Skipper" should really go to town this summer. — 6MO heard and worked by many on 7 Mc. Watheroo Observatory is really on the map as a Ham station these days.

6HT has a combination of a two element beam atop a 35 feet steel tower with a homebrew v.f.o. that really works. Harry sure goes places on 14 Mc. but just can't make that South American for W.A.C. on that band. — 6WG is mainly active on 7 Mc. at present with occasional bursts on 28 Mc., but is working on some 50 Mc. gear. — 6T intends cross country tests with 6HT on 50 Mc. early in October. Both have their receivers down on 50 Mc. and are keeping an ear out for city signals. — 6EC, at Wagin, also interested in 50 Mc. work. At present active on 7 Mc. with a modified FS6. — 6DX paid us a visit to Perth for the October meeting. Bill gave us all the dope on the Goldfields doings.

DX OF THE MONTH

28 Mc. Phone.—This band, during this last month, has provided more DX entertainment than it did last summer, and if those Hams who are considering getting on this band read this article through, they will then probably get there sooner. W.A.C. has been made on two Sundays during the month and on the 21st all Continents were worked in just under two hours; so get up on to 28 Mc. you DX fiends and give VK6 some more publicity.

Europe.—Practically every day the band has opened to this Continent from about 1600 to as late as 2200 occasionally, and has provided more QSOs than any other Continent. From England the Gs have been too numerous to mention and many of them have had signals well over S9. GI7UW, EI3J, F8ZW, F8XT, F9FB, F3TA, F3KH, F8NT, F3GL, D4AOM, D4ADT, D4APN, D2SP, OI2KAJ, LX1SI, LX1MS, LX1JW, I1SM, I1MH, W2VJW/Portable Istanbul (Turkey). ZB1AC, OZ5KW, OZ4PB, OX7CC, PA0UN, PA0FB, PA0OO, PA0AN and SM5WJ have all been good contacts.

North America.—The Ws have been putting in an appearance during the mornings from 0700 to 1200 but

working them has only been spasmodic, i.e. week-ends and prior to 9 a.m. some mornings. W5, W0, W6, W7 districts have been the most prominent. VEs from Canada have been absent and the only Alaskan contact was KL7LO.

Central America.—These chaps have proved most elusive and the only few worked were YN4DT, KZ5OJ and CO2JV.

South America.—Sunday mornings from 1030 to 1230 seem to be the best times for turning the beam south and

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for three week-ends of the month the band opened. CEIAH has had by far the best signal and the others worked were HK3EO and HK3DW.

Africa—This Continent is becoming more 28 Mc. minded than last season and the ZSs from the Union have been in the majority, the number being worked far too numerous to mention. Many new friends are being made and many of the old contacts from last summer are being repeated. CQ5BA, CQ5AR, VQ3PYE, VQ3EDD, VQ4NSH, VQ4ERR, VQ2PL, ZEZJA, ZELJH, WKIF Maritime Mobile in Tanga Harbour (Tanganyika) and W2SXW Maritime Mobile working along the west coast of Madagascar, all proved most interesting QSOs. ST2MP (ex-VS9AP), ST2AM, ST2FT, SUIWS, SUIHF, MD5BL and MD5TS were also excellent contacts.

Asia—The VUs, Js, etc., have been thinning out lately as conditions this last month have not apparently favoured north-south contacts. However, ZC6RG, VUTAB and CR9AG are three of the rarer ones worked.

Oceania—The Northern Pacific area has shown some promise lately, and also the ZL have been pounded through like locals. KH6JL, KH6DS, KH6BT, KH6AQ, KH6SP, W5LKW/KH6 and KM6AB were 100% contacts.

14 Mc. Phone—This band has slackened off of late and conditions in general have been poor. However, the band provided some quite good QSOs and should show further improvement as the summer months approach, particularly at night time in the European direction.

Europe—During the last week of the month the band has been open to this Continent from 1400 to 1700, 2300 to 0130, and also from 0630 to 0800 occasionally. Those worked late at night were OH5OA, G3BLG, G5OV, G2XC, OZ2IZ, OZ7TS, HB9FU, G3BM was worked during the afternoon and in the early morning period F8YW, F3SL, G2DS, G8QW, G2IG were all 100% QSOs.

North America—Ws have been numerous and a few chaps are starting to come in via the long summer path across the South Pacific. VE3HI was the only Canadian worked. W9NTV was worked across South Africa at 0745 on the 24th, which shows that this Continent is starting to get into Australia from the south west.

Central America—A few of these boys have put in an appearance on the high end of 14 Mc. CO2KO, CO2LA, TI2QA, VP9F, XE1FB, XE2KA, XE1QL and HR1MB were the rare ones.

South America—Only one contact of note, that being HK1FQ who operates on 14395 or so nearly every evening of the week and just pounds through.

Africa—One solitary contact was ZS5EW from Durban.

Asia—Two nice QSOs—HZ1AB (Saudi, Arabia) worked at 0715, and ZC6JL (Palestine) worked immediately afterwards.

TASMANIA

Secretary: J. Brown, VK7BJ
12 Thirza Street, New Town.
Phone W 1328.

Meeting, Place: Photographic Society's Rooms, 163 Liverpool Street, Hobart.

Meeting Night: First Wednesday of each month.

Old man winter has withdrawn his bony fingers once more, the orchards are in blossom, white sails are on the water and—what?—Radio? ah, yes. Well, there were thirty-one at the October meeting, all more or less comfortably disposed around the place, but it was nice to hear from 7EJ that negotiations are under way for some lebensraum up the road. More details of this should soon be available.

7XA made a further report on the Food-for-Britain Fund, which netted another £5/13/- on this occasion. The position now is that we have some food and the Gs can use it, but a letter from the R.S.G.B. indicates that we shall have to seek the British Food Ministry's permission to ship it in bulk. This is understood to be an anti-blackmarketing precaution and, as the only alternative is to break up the consignments into individual parcels with attendant expense, there may be some delay while the idea is being ironed out.

The idea of morse practice transmissions was mooted and thought to be good, mainly for examination candidates whose speed is not well catered for. It is understood in all good feeling, however, that Peter Dunne considers there would be a danger of QRMing the broadcast harmonics on 3.5 Mc. of a Sunday morning.

7LL, as reported earlier, represented at a meeting of the Association of Scientific Societies. There is now some doubt as to whether any mutual benefit would result from our membership and it was decided to leave the matter in abeyance.

At the close of the meeting 7OM took the floor with a description of his adventures with a mangle, blocks and printer's ink in the course of turning out quite nice QSL cards. It is just like shelling peas. You don't really need a mangle, in fact you don't need anything but patience and an introduction from Bob to someone in the printing trade!

PERSONALITIES

Eric Trebilcock, up at Wynyard, makes us feel like doing away with the rig, his SWL activities having brought in QSLs from close on a hundred countries this side of the war. ——— TCW has trimmed up a radar receiver to do nicely for 50

Mc. ——— 7AF has his transmitter on paper and has rebuilt it a couple of times, but looks like making a big noise soon. ——— 7CT is building a new receiver between bouts of attending to Ford troubles. ——— 7KA is putting the theodolite over Tasman Peninsular, but cranks up the Type 3 Mark 2 occasionally.

7LJ putting out some nice phone, and has designs on the DX Contest. ——— 7BJ, 7YY and 7OM romping around on 3.5 Mc. one Sunday morning with Type A Mark 3s. ——— 7XA still firmly wedded to "Ten" (metres, Charlie, we trust) and doing nicely. ——— 7GH back on the air after many years, plans to keep an eye on the bands during a proposed spell in hospital. ——— 7JH also been on the casualty list after trying conclusions with a few thousand volts at Waddamana, but fortunately has little to show for it now. ——— 7GJ may soon be back among us, having nearly completed the new QTH.

NORTHERN ZONE

The VK Phone Contest is being concluded as these notes are being compiled and as far as I can ascertain the Tasmanian effort this year was practically zero. Certainly no Amateur in the Launceston district participated. It is to be regretted that conditions for the first week-end were so bad. Possibly had conditions been better at the beginning, the Contest would have had better VK7 support.

Understand that several stations here will be operating during the c.w. portion of the test. Although none of our members here have any ideas about bringing home the major prize, we are hoping to keep Tasmania on the map.

Conditions for the month of September were very erratic with some excellent DX breaking in at odd times. 7BQ is still consistent on 7 Mc., although Len has done quite a lot of work on 50 Mc. lately. His 3. element certainly knocks my speaker about on this band. To date neither 7BQ or 7LZ have heard or worked anything—except each other.

7RK is still active on 14 Mc. and has been working some good DX on c.w. ——— 7DS is still on 7 Mc. and is going to stay there for the Contest. ——— 7GD is now building an all-band phone rig, using a pair of 809s. ——— 7TE, although Bill lives in Launceston, no one ever sees him. Understand he is confining his activities to 166 Mc. ——— 7AB and 7XL are now working regular skeeds on 50 Mc. Doug is also building up some portable gear. ——— 7LZ just left these notes to QSO KG6AI. Gave him a number for the Contest and was informed that the contact made a difference of 500 points to his score. Just goes to show that some of us should have made the effort for the sake of the DX stations.

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"TEN"

By VK5PS

So you are thinking of giving 28 Mc. a try-out young man? Well, I suppose you will learn more by actual experience than all the reading in the world, but I feel that a little information on the customs and mannerisms of the inhabitants of this band will not come amiss. Most of what is to follow is applicable to VK5 only, but probably applies equally well to any part of the world.

When first coming upon "Ten" after the rush and bustle of "Twenty" and "Forty" it is like turning up a side stream from off a swift flowing river after battling for many days with the strong current. It is decidedly quiet and peaceful with emphasis on the peaceful. The manner of speaking, the method with which the QSO is handled and the old world courtesy of the inhabitants has to be experienced to be appreciated.

Take the "modus operandi" of the answer to the CQ call. On "Twenty" one says "Hello VK5XYZ, this is VK5ABC right back." On "Ten" they say "VK5XYZ from VK5ABC." Just that and no more. A little chilling isn't it. It isn't meant that way, definitely not, it is just that this is the standard method of "Ten," and when you remember that some of these inhabitants have been cloistered on "Ten" for many years, never coming up for air, living and breathing the lavender and old lace atmosphere existing there, one can quite appreciate how the manners and customs have become so standardised. On "Ten" one says Q-R-ZEE, not Q-R-ZED, and when one signs on each over, it becomes almost a ritual, nearly as long as one of the "soap operas" heard on broadcast programmes (not that any true Ham would be guilty of listening to a broadcast programme).

One gives the street, the suburb, the district, the state and nearest capital city, the hemisphere and a couple of nearby constellations for good measure. If by any chance one should omit any of these very important particulars, the note of pain in the voice at the other end of the QSO is plainly discernable. There are none of those slap dash quick fire contacts on "Ten" such as we experience on "Twenty" or "Forty." No Sir! Most of the contacts start on Monday night and aside for time off for sleeping, eating and a little attendance at one's vocation, it goes on until the following Sunday night. What about DX you say. It's there for the asking and sometimes without asking, but the inhabitants are not very interested in DX on this band.

Familiarity breeds contempt I expect. The standard QSO usually opens with "Good evening old man and how is Mum" ("Mum" mind you, not the XYL), and usually contains a couple of references to "home made fig jam" or "thank you for the recipe on fairy sponge, Mum" (there it is again) quite enjoyed it."

This patter is tossed about by both sides, and eventually someone gets around to a signal report which apparently nobody is interested in because it is usually R5 S9 anyway. A little mild excitement now creeps in as both sides indulge in a bout of beam swinging, whizzing their beams around and discoursing on S meters, and back-to-front ratios, etc., until "Mum" (she's in again) brings in a cup of tea and a few biscuits, thereby breaking up this extremely technical discussion, and judging by the quick breathing of both sides of the QSO, it is just in time to save them both from collapsing from heart failure. It's a long way down to the bottom of the garden to swing that beam you know. It now becomes no secret that biscuits and tea are on the menu, because a noise like a stone crusher in action denotes biscuits and a something like the plug being pulled out of a bath must surely be tea drinking.

Now perhaps you have occasionally over-modulated on "Twenty" and when it was mentioned to you, you mentally advised the chap on the other end to jump in the lake, and went merrily on your way. On "Ten" this is handled with much more finesse. During the QSO, at a suitable time, the other end will gently say "I think old boy you could turn back your gain control slightly on the next over. I am receiving you real well here." Now I ask you, could you resist that? Should you possibly possess the hide of a rhinoceros, well! an alligator and still over-modulate after this polite hint you will no doubt hear something resembling the following.

"I say old boy, I just heard those boudiers Paseby and Parbler with their disposal transmitters over-modulating like the very deuce, somebody should speak to the cads about it." Could you still do your alligator act after hearing that sort of thing?

Now young man after awhile all this will so enter your bones that you will become just like the regular inhabitants, asking how "Mum" is (here's that woman again) and even falling for fairy sponge and fig jam, so much so that in an attempt to shake free the shackles of "Ten" you will go back to "Twenty" for one QSO, yes one QSO only, and you will be so bewildered and flurried at all the rush and bustle that you will scurry back to the peace and quietness of "Ten," resolved never to

venture away again from such a haven of rest.

By the way young man have you ever tasted "Mum's" (this is where I came in) fairy sponge? Pardon me! I thought we were on "Ten"! Sorry to have kept you so long old boy—did dit dit dah dit dah.

CORRESPONDENCE

Bega, N.S.W.

Editor, "A.R."

The letter in September "A.R." from Messrs. Harrison and Buck seems to reflect the attitude of those who passed the A.O.C.P. when telegraphy was more important than technical ability; when only a few of the very best stations had plate modulation and multi-stage transmitters.

It does seem to me that being a telegraphist is something entirely separate from, and in no way, indicative of one's technical capabilities. Telegraphists can be mass produced like sausages, and from similar materials. That keenness and intelligence, which can make an ideal amateur experimenter, are often turned to other channels by the compulsory period of boredom entailed in learning the code.

If, after having pushed oneself through this period, another six months of having to drag oneself through contacts with, mainly, other beginners has to be gone through, then one would be quite justified in keeping off code for life.

Except for a few limited applications, the day of hand telegraphic communication is fast going, and cutting out the probationary period is a step in the right direction, that is, towards deleting altogether the telegraphy part of the A.O.C.P.

The question is—telegraphists or technicians? Ham Radio is losing too many of the latter today.

Yours faithfully,

L. VALE, VK2ANN.

49 Farnham Road,
Ashford, S.A.

Editor, "A.R."

The genuine Ham will agree most heartily with Messrs. Harrison and Buck. I feel sure that the Department realises the value of the Morse Code and it will continue to be a requirement.

One way in which we can justify our occupancy of the bands is our potential value to the armed forces. This value would drop immensely if we were all phone men. (The U.S.N. claimed that phone men had to start all over again.)

The W.I.A. can be the big factor in maintaining our prestige and efficiency and should make every

effort to do so. It would be an excellent idea if the greater part of the official W.I.A. broadcasts were made in morse, without a repetition on phone.

Perhaps the Navy Minister could be persuaded to make an annual broadcast on Trafalgar Day, along the lines of the A.R.R.L. annual navy day broadcast.

Yours fraternally,
J. COULTER.

VALVES FOR F.M. RECEIVERS

After careful investigation of the whole position, A.W.V. Co. have decided to standardise on two types of miniature a.c. valves which are essential for the design and manufacture of f.m. receivers. The first is type 6BA6, a high-slope r.f. pentode which is suitable for use as an r.f. or i.f. amplifier. It has exceptionally low grid-plate capacitance and does not require an external shield. The second is type 6BE6, a miniature converter.

Data on types 6BA6 and 6BE6 are given below:—

RADIOTRON 6BA6

Miniature R.F. Pentode

Radiotron 6BA6 is a miniature high-slope r.f. amplifier with remote cutoff.

GENERAL DATA

Electrical:—
Heater for unipotential cathode:
Voltage 6.3 a.c. or d.c. volts
Current 0.3 amp.
Direct Interelectrode Capacitance:^a
Grid No. 1 to
plate 0.0035 max. uufd.
Input 5.5 uufd.
Output 5.0 uufd.

Mechanical:
Mounting Position Any
Maximum Overall Length 2½"
Maximum Seated Length 1½"
Length from Base Seat to Bulb
Top (excluding tip) 1½" ± 3/32"
Maximum Diameter ¾"
Bulb T-5-½
Base Miniature Button 7-Pin
Basing Designation 7BK1
Pin 1-Grid No. 1
Pin 2-Grid No. 3, Internal Shield
Pin 3-Heater
Pin 4-Heater
Pin 5-Plate
Pin 6-Grid No. 2
Pin 7-Cathode

CLASS A AMPLIFIER

Maximum Ratings, Design-Centre Values:—
Plate Voltage 300 max. volts
Grid No. 2 (screen) voltage 125 max. volts
Grid No. 2 supply voltage 300 max. volts
Plate dissipation 3 max. watts
Grid No. 2 dissipation 0.6 max. watts
Grid No. 1 (control grid) voltage:
Neg. bias value 50 max. volts
Pos. bias value 0 max. volts

Peak heater-Cathode voltage:

Heater neg. with respect to Cath. 90 max. volts
Heater pos. with respect to cath. 90 max. volts

Typical Operation & Characteristics:

Plate voltage 100 250 volts
Grid No. 3 (suppressor) connected to cath. at socket
Grid No. 2 voltage 100 100 volts
Cathode-bias resistor 68 68 ohms
Plate Resistance (approx.) 0.25 1.5 meg.
Transconductance 4300 4400 umhos
Grid No. 1 bias (approx.) for transconductance of 50 umhos -20 -20 mA.
Plate current 10.8 11 mA.
Grid No. 2 current 4.4 4.2 mA.
^a With no external shield.

RADIOTRON 6BE6

Miniature Pentagrid Converter

Radiotron type 6BE6 is a miniature converter having characteristics closely resembling those of type 6SA7GT.

GENERAL DATA

Electrical:—
Heater, for Unipotential Cathode:
Voltage 6.3 a.c. or d.c. volts
Current 0.3 amp.
Direct Interelectrode Capacitance:^a
Grid No. 3 to all other electrodes (r.f. input) 7.2 uufd.
Plate to all other electrodes (mixer output) 8.6 uufd.
Grid No. 1 to all other electrodes (osc. input) 5.5 uufd.
Grid No. 3 to plate 0.30 max. uufd.
Grid No. 1 to grid No. 3 0.15 max. uufd.
Grid No. 1 to plate 0.05 max. uufd.
Grid No. 1 to all other electrodes except cathode 2.7 uufd.
Grid No. 1 to cathode 2.8 uufd.
Cathode to all other electrodes except Grid No. 1 15 uufd.

Mechanical:—
Mounting Position Any
Maximum Overall Length 2½"
Maximum Seated Length 1½"
Length from Base Seat to Bulb
Top (excluding tip) 1½" ± 3/32"
Maximum Diameter ¾"
Bulb T-5-½
Base Miniature button 7-Pin
Basing designation 7CH
Pin 1-Grid No. 1
Pin 2-Cathode, Grid No. 5
Pin 3-Heater
Pin 4-Heater
Pin 5-Plate
Pin 6-Grid No. 2, Grid No. 4
Pin 7-Grid No. 3

CONVERTER

Maximum ratings, design-centre values:—

Plate voltage 300 max. volts
Grids-No. 2 and No. 4 voltage 100 max. volts
Grids-No. 2 and No. 4 supply voltage 300 max. volts
Plate dissipation 1.0 max. watt
Grids-No. 2 and No. 4 dissipation 1.0 max. watt
Total cathode current 14 max. mA.
Grid-No. 3 voltage:
Neg. bias value 50 max. volts
Pos. bias value 0 max. volts
Peak heater-Cathode voltage:
Heater neg. with respect to cath. 90 max. volts
Heater pos. with respect to cath. 90 max. volts
Characteristics—Separate excitation:^a
Plate voltage 100 250 volts
Grids-No. 2 and No. 4 (screen) voltage 100 100 volts
Grid-No. 3 (control grid) voltage -1.5 -1.5 volts
Grid-No. 1 (oscillator grid) resistor 20000 20000 ohms
Plate resistance (approx.) 0.5 1.0 meg.
Conversion transconductance 455 475 umhos
Conversion transconductance (approx.)[†] 4 4 umhos
Plate current 2.8 3.0 mA.
Grids-No. 2 and No. 4 current 7.3 7.1 mA.
Grid-No. 1 cur'nt 0.5 0.5 mA.
Total cath. cur'nt 10.6 10.6 mA.

NOTE:—The transconductance between grid No. 1 and grids No. 2 and No. 4 connected to plate (not oscillating) is approximately 7250 micromhos under the following conditions: grids No. 1 and No. 3 at 0 volts; grids No. 2 and No. 4 and plate at 100 volts. Under same conditions, the plate current is 25 milliamperes, and the amplification factor is 20.

^aThe characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.

[†]With grid-No. 3 bias of -30 volts.

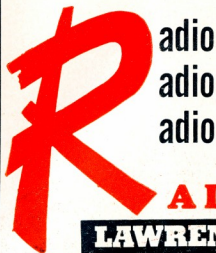
^{*}With no external shield.

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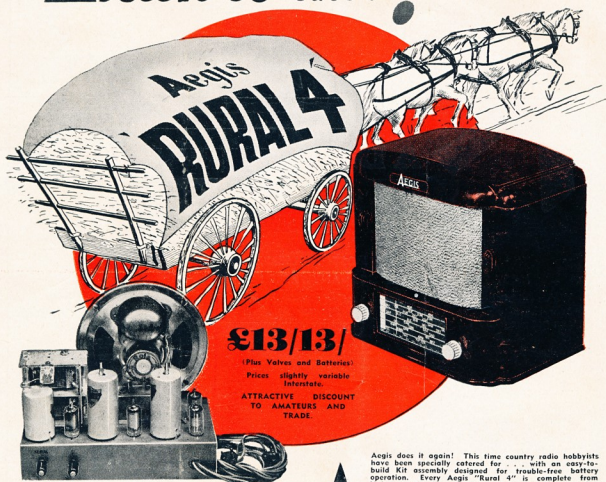
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